CLAIMS:

1. An optical scanning device for scanning optical record carriers, the device comprising an optical system for converging first and second radiation beams onto the optical record carriers being scanned, the optical system including an optical element arranged along an optical axis and having at least two portions, including a body portion having relatively low birefringence and a wavefront aberration generating portion having a relatively high birefringence, the body portion having an attachment surface on which the wavefront aberration generating portion is formed, the wavefront aberration generating portion having a first surface facing said attachment surface and a second surface facing away from said attachment surface, the first and second surfaces being of a different shape so that the thickness of the wavefront aberration generating portion, measured parallel to said optical axis, varies along a direction perpendicular to the optical axis, and wherein the thickness of the wavefront aberration generating portion at said optical axis is less than half the thickness of the body portion at said optical axis.

2. An optical scanning device according to claim 1, wherein the thickness of the wavefront aberration generating portion along said optical axis is less than one fifth of the thickness of the body portion along said optical axis.

3. An optical scanning device according to claim 1 or 2, wherein the wavefront aberration generating portion is arranged to generate a difference in wavefront aberrations in said first and second beams respectively, which difference is greater than that generated by the body portion when illuminated by the first and second beams respectively.

4. An optical scanning device according to any of claims 1 to 3, wherein the body portion is a lens body.

5. An optical scanning device according to claim 4, wherein the attachment surface is a curved surface.

6. An optical scanning device according to claim 5, wherein the attachment surface is substantially spherical.

7. An optical scanning device according to claim 6, wherein the body portion has a plano-spherical form.

8. An optical scanning device according to any preceding claim, wherein the second surface is non-planar.

9. An optical scanning device according to claim 8, wherein the second surface is substantially aspherical.

10. An optical scanning device according to claim 8 or 9, wherein the second surface includes a stepped phase structure which is non-periodic with respect to a direction perpendicular to the optical axis.

11. An optical scanning device according to any preceding claim, wherein the thickness variation of the wavefront aberration generating portion is such that the thickness in one part of the wavefront aberration-generating portion is at least half the thickness in another part of the wavefront aberration-generating portion.

12. An optical scanning device according to any preceding claim, wherein the average thickness of the wavefront aberration generating portion, taken across at least one of said first and second beams, is less than 500μm.

13. An optical scanning device according to claim 12, wherein the average thickness of the wavefront aberration generating portion, taken across at least one of said first and second beams, is less than 100μm.

14. An optical scanning device according to any preceding claim, wherein the body portion is substantially non-birefringent.

15. An optical scanning device according to claim 14, wherein the body portion is made of a glass material.

16. An optical scanning device according to any preceding claim, wherein the wavefront aberration generating portion is made of a curable liquid crystal material.

17. An optical scanning device according to any preceding claim, wherein the optical system is arranged to operate in an infinite conjugate arrangement both when scanning using said first radiation beam and when scanning using said second radiation beam.

18. An optical element for use in an scanning device for scanning optical record carriers, the device comprising an optical system for converging first and second radiation beams onto the optical record carriers being scanned, the optical element having at least two portions arranged along an optical axis, the element including a body portion having relatively low birefringence and a wavefront aberration generating portion having a relatively high birefringence, the body portion having an attachment surface on which the wavefront aberration generating portion is formed, the wavefront aberration generating portion having a first surface facing said attachment surface and a second surface facing away from said attachment surface, the first and second surfaces being of a different shape so that the thickness of the wavefront aberration generating portion, measured parallel to said optical axis, varies along a direction perpendicular to the optical axis, and wherein the thickness of the wavefront aberration generating portion at said optical axis is less than half the thickness of the body portion along said optical axis.

19. An optical element according to claim 18, wherein the thickness of the wavefront aberration generating portion along said optical axis is less than one fifth of the thickness of the body portion along said optical axis.

20. An optical element according to claim 18 or 19, wherein the body portion is a lens body.

21. An optical element according to any of claims 18 to 20, wherein the second surface is non-planar.

22. An optical element according to claim 21, wherein the second surface is substantially aspherical.

23. An optical element according to any of claims 18 to 22, wherein the average thickness of the wavefront aberration generating portion across its width is less than 100μm.

24. An optical element according to any of claims 18 to 23, wherein the body portion is substantially non-birefringent.

25. An optical element according to claim 24, wherein the body portion is made of a glass material.

26. An optical element according to any of claims 18 to 25, wherein the wavefront aberration generating portion is made of a curable liquid crystal material.